

	Type	L #	Hits	Search Text	DBs	Time Stamp
1	BRS	L1	1683579	(design or designed or designing or make or making or made or build or built or building or layout or laying or plan or planned or planning) near5 (change or changed or changing or modify or modified or modifying or modification or alter or altering or altered or alteration)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:12
2	BRS	L2	1211108	(cost or costing or price or pricing or fee or feeing or rate or rating or charge or charged or charging or bill or billed or billing or amount or value or quote or quoted or quoting or quotation) near5 (calculate or calculated or calculating or calculation or estimate or estimated or estimated or estimating or estimation or determine or determined or determining or determination or predict or predicted or predicting or prediction or evaluate or evaluated or evaluating or evaluation or forecast or forecasted or forecasting)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:13
3	BRS	L3	2441	1 near5 2	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:13

	Type	L #	Hits	Search Text	DBs	Time Stamp
4	BRS	L4	805615	(design or designed or designing or make or making or made or build or built or building or layout or laying or plan or planned or planning) near5 (line or link or channel or net or network or communicate or communicated or communicating or communication or wan or lan or web or internet or intranet)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:13
5	BRS	L5	625	3 and 4	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:13
6	BRS	L6	1445806	(design or designed or designing or make or making or made or build or built or building or layout or laying or plan or planned or planning) near5 (form or size or shape or density or (power near2 dissipat\$4) or mechanical or feasibl\$4 or compat\$6)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:13
7	BRS	L7	252	5 and 6	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:13
8	BRS	L8	1785	1 same 2 same 6	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:14
9	BRS	L9	31	7 and 8	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:14
Scanned Ti, Ab, Hwic all						

	Type	L #	Hits	Search Text	DBs	Time Stamp
10	BRS	L10	192824	(prior or previous\$3) near2 (select or selected or selecting or selection or form or size or shape or density or function or propert\$3)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:15
11	BRS	L11	555842	(predict or predicted or predicting or prediction or suggest or suggested or suggesting or suggestion or select or selected or selecting or selection) near5 (form or size or shape or density or function or propert\$3 or (power near2 dissipat\$4) or mechanical or feasibl\$4 or compat\$6 or 10)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:16
12	BRS	L12	27417	11 near5 (design or designed or designing or make or making or made or build or built or building or layout or laying or plan or planned or planning)	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:16
13	BRS	L13	82	3 and 12 <i>Scanned Ti, Ab, Kwic all</i>	USPAT; US-PGPUB; EPO; JPO; DERWENT; IBM_TDB; USOCR	2004/07/08 13:16

	Document ID	Issue Date	Inventor	Current OR	Current XRef	Pages
1	EP 1221786 A1	20020710				19
2	US 6496957 B1	20021217	Kumagai, Koichi	716/4	716/1; 716/15	122
3	US 6425110 B1	20020723	Hathaway, David J. et al.	716/2	716/4; 716/6	22
4	US 6083275 A	20000704	Heng, Fook-Luen et al.	716/19	430/4; 430/5; 430/8; 716/21	24
5	US 5684713 A	19971104	Asada, Haruhiko et al.	716/19	700/182	30

L9 results

	Document ID	Issue Date	Inventor	Current OR	Current XRef	Pages
1	US 6496957 B1	20021217	Kumagai, Koichi	716/4	716/1; 716/15	122
2	US 6083275 A	20000704	Heng, Fook-Luen et al.	716/19	430/4; 430/5; 430/8; 716/21	24
3	US 4831546 A	19890516	Mitsuta, Toru et al.	703/1	345/441; 345/629	28
4	US 3622762 A	19711123	Dyer, Lester W. et al.	716/4	716/1; 968/579; 968/DIG.1	21

L13 results

US-PAT-NO: 4831546

DOCUMENT-IDENTIFIER: US 4831546 A

TITLE: Method and apparatus for assisting layout design

DATE-ISSUED: May 16, 1989

INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Mitsuta; Toru	Hitachi	N/A	N/A	JP
Wada; Yutaka	Hitachi	N/A	N/A	JP
Kobayashi; Yasuhiro	Katsuta	N/A	N/A	JP

US-CL-CURRENT: 703/1, 345/441, 345/629

ABSTRACT: A layout design assisting system operates in the following steps. A drawing of a layout area for installing a plurality of layout objects is displayed on a display unit. The operator specifies one of the displayed layout objects. Another layout object which interferes with the specified layout object is found in the layout area. An economical loss imposed on the specified layout object attributable to the other layout object is evaluated. Examination is conducted as to whether or not the other layout object can be relocated so that it does not interfere with the specified layout object. The specified layout object, the other layout object, the economical loss and the examination result are displayed on the display unit.

11 Claims, 21 Drawing figures

Exemplary Claim Number: 1

Number of Drawing Sheets: 19

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Detailed Description Text - DETX (6): Step 9 is to display an initial layout plan, step 10 is to enter data of a specified layout object, step 11 is to find another layout object which affects the layout of the specified layout object and find portions of the specified layout object under the influence of the other layout object, step 12 is to evaluate the value of loss attributable to the layout of the specified layout object, step 13 is to display the other layout object affecting the layout, the portion of the specified layout object under influence of the other layout object, and the value of loss, step 14 is to enter a layout object to be relocated and its new coordinates, step 15 is to examine whether the modified layout plan entered in step 14 is feasible by the relocation of the other layout object, step 16 is to produce graphic data for the modified layout plan, step 17 is to evaluate the value of loss pertinent to the modified layout plan, and step 18 is to display the examination result of step 15, the graphic data produced in step 16, and the value of loss evaluated in step 17.

Detailed Description Text - DETX (40): Step 17 calculates the value of loss for each modification-feasible layout plan examined in step 15. This operation is the calculation of loss after modification for all modification layout objects carried out in the same manner as steps 11 and 12. In case the loss is evaluated as a length of route, the value of loss may be calculated on the basis of the difference between the total length of the initial layout plan and the total length of the modified layout plan. The resulting data of

loss are stored in relation with the layout plans in the intermediate data memory 5e. When the layout modification of the layout object specified for relocation in step 14 has been executed, the combination of a decreased value of loss of the specified layout object and increased values of loss of other layout objects attributable to this layout modification may result in an increased value of loss as the whole.

Detailed Description Text - DETX (42): Another conceivable display mode is that only evaluation tables of layout plans are displayed so that the operator can choose one of the tables, and the selected layout plan is displayed in the form as shown in FIG. 15. FIG. 16 shows an example of the evaluation table. The table lists, for all modified layout plans, the name of layout objects which need to be relocated, the change in the total length of route due to modification (in the case of piping), and the change in the amount of hardware such as steel bars necessary for the layout modification.